

Porous semiconductor compounds

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<https://doi.org/10.1088/1361-6641/ab9477>

Abstract

In this review paper, we present a comparative analysis of the electrochemical dissolution of III-V (InP, GaAs, GaN), II-VI (ZnSe, CdSe) and SiC semiconductor compounds. The resulting morphologies are discussed including those of porous layers and networks of low-dimensional structures such as nanowires, nanobelts, nanomembranes etc. Self-organized phenomena in anodic etching are disclosed, leading to the formation of controlled porous patterns and quasi-ordered distribution of pores. Results of templated electrochemical deposition of metal nanowires, nanotubes and nanodots are summarized. Porosification of some compounds is shown to improve luminescence characteristics as well as to enhance photoconductivity, second harmonic generation and Terahertz emission. Possible applications of porous semiconductor compounds in various areas are discussed.